SYSTEM AND METHOD FOR DISTORTION CHARACTERIZATION IN FINGERPRINT AND PALM-PRINT IMAGE SEQUENCES AND USING THIS DISTORTION AS A BEHAVIORAL BIOMETRICS

5   **ABSTRACT**

This invention uses a novel biometrics, called resultant fingerprints and palm-prints, for authentication. The novel biometrics are consecutive traditional print images where the subject physically changes the appearance of the print images by rotating or rotating and translating, or rotating, translating, and shearing the finger or palm. That is, it is a sequence

10   of finger or palm-print images over a short interval of time where the images are modified according to the rotation or a combination of rotation and translation or a combination of rotation, translation, and shear. The rotational and translational and shear components of the motion in the sequence of print images are determined from the image-to-image flow. This flow is either computed from motion-compensation vectors of the sequence compressed in MPEG

15   formats or directly from the uncompressed images. The global image-to-image flow is expressed in terms of an affine transformation, computed from the local flow in blocks around a non-moving central region. The rotational and translational components of this affine transformation are smoothed over a temporal neighborhood resulting in a function of time. This function of time is a behavioral biometrics which can be changed by the user when compromised.

20   Matching of this function for authentication purposes is achieved very much as is done in legacy signature matching authentication systems where two temporal signals are compared.